

2002

SEQUENCE LISTING

<110> Estell, David A.
Harding, Fiona A.

<120> PROTEINS PRODUCING AN ALTERED IMMUNOGENIC RESPONSE AND
METHODS OF MAKING AND USING THE SAME

<130> A-68693/DJB/DAV

<140> US 09/304,135
<141> 2000-03-08

<150> US 09/360,872
<151> 1998-04-15

<160> 236

<170> PatentIn Ver. 2.1

<210> 1
<211> 1436
<212> DNA
<213> *Bacillus amyloliquefaciens*

<220>
<221> mat_peptide
<222> (417)..(1436)

<223>
<221> CDS
<222> (96)..(1244)

<223>
<221> misc_feature
<222> (582)..(584)
<223> The nnn at positions 582 through 584 which in a
preferred embodiment (aat) is to code for
asparagine, but which may also code for proline.

<223>
<221> misc_feature
<222> (585)..(587)
<223> The nnn at positions 585 through 587 which in a
preferred embodiment (cct) is to code for proline,
but which may also code for asparagine.

<223>
<221> misc_feature
<222> (587)..(599)
<223> The nnn at positions 597 to 599 which in a
preferred embodiment (aac) is to code for
asparagine, but which may also code for aspartic acid.

<223>
<221> misc_feature
<222> (678)..(680)
<223> The nnn at positions 678 through 680 which in a
preferred embodiment (gca) is to code for
alanine, but which may also code for serine.

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<220>
<221> misc_feature
<222> (681)..(683)
<223> The nnn at positions 681 through 683 which in a preferred embodiment (tca) is to code for serine, but which may also code for alanine.

<224>
<225> misc_feature
<226> (708)..(710)
<227> The nnn at positions 708 through 710 which in a preferred embodiment (gct) is to code for alanine, but which may also code for aspartic acid.

<228>
<229> misc_feature
<230> (711)..(713)
<231> The nnn at positions 711 through 713 which in a preferred embodiment (gac) is to code for aspartic acid, but which may also code for alanine.

<232>
<233> misc_feature
<234> (898)..(899)
<235> The nnn at positions 898 through 899 which in a preferred embodiment (act) is to code for threonine, but which may also code for serine.

<236>
<237> misc_feature
<238> (891)..(893)
<239> The nnn at positions 891 through 893 which in a preferred embodiment (tcc) is to code for serine, but which may also code for threonine.

<240>
<241> misc_feature
<242> (1167)..(1169)
<243> The nnn at positions 1167 through 1169 which in a preferred embodiment (gaa) is to code for glutamic acid, but which may also code for glutamine.

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tttctactaa aatattattt catastatatc aatataata cagaataatz tgtcttatgg 60

tttcttgca aatggaaaaaa aggagaggat aaaga atg agt ggc aaa aaa gta 113
Met Arg Gly Lys Lys Val
-105

lys atc agt ttg ctg ttt gct tta gcg tta atc ttt aog aig gcg ttc 161
Trp Ile Ser Leu Leu Phe Ala Leu Ala Leu Ile Phe Thr Met Ala Phe
-100 -95 -90

gly agc aca tcc tct gcc cag gcg gca ggg aaa tca aac ggg gaa aag 209
Gly Ser Thr Ser Ser Ala Gln Ala Ala Gly Lys Ser Asn Gly Glu Lys
-105 -95 -90

ala tat att gtc ggg ttt aaa cag aca atg ayc ayc atg ayc gac gct 257
Lys Tyr Ile Val Gly Phe Lys Gln Thr Met Ser Thr Met Ser Ala Ala

-65	-60	-55		
aag aag aaa gat gtc att tct gaa aaa ggc ggg aaa gtg caa aag caa Lys Lys Lys Asp Val Ile Ser Glu Lys Gly Gly Lys Val Gln Lys Gln			305	
-50	-45	-40		
tcc aaa tat gta gac gca gct tca gct aca tta aac gaa aaa gct gta Phe Lys Tyr Val Asp Ala Ala Ser Ala Thr Leu Asn Glu Lys Ala Val			353	
-35	-30	-25		
aaa gaa ttg aaa aaa gac ccg agc gtc gct taa gtt gaa gaa gat cac Lys Glu Leu Lys Lys Asp Pro Ser Val Ala Tyr Val Gln Glu Asp His			401	
-20	-15	-10		
gtt gca cat gcg tac gcg cag tcc gtg cct taa ggc gta tca paa att Val Ala His Ala Tyr Ala Gln Ser Val Pro Tyr Gly Val Ser Gln Ile			449	
-5	-1	3	11	
aaa gcc cct gct ctg sac tct caa ggc tac act gca tca aat gti aac Lys Ala Pro Ala Leu His Ser Gln Gly Tyr Thr Gly Ser Asn Val Lys			497	
-15	20	25		
gtt ggg gtt atc gag agc ggt atc gat tct tct sat tct gat tta aag Val Ala Val Ile Asp Ser Gly Ile Asp Ser Ser His Pro Asp Leu Lys			545	
30	35	40		
gtt gca ggc gga gcc agc atg gtt cct tct gaa aca annnnnnn ttc caa Val Ala Gly Gly Ala Ser Met Val Pro Ser Glu Thr Xaa Xaa Phe Gln			593	
45	50	55		
gac nnn aac tct cac gga act cac gtt gcc ggc aca gtt gca gct ctt Asp Xaa Asn Ser His Gly Thr His Val Ala Gly Thr Val Ala Ala Leu			641	
60	65	70	75	
aat aac tca atc ggt gta tta ggc gtt ggc sca agc annnnnnn ctt tac Asn Asn Ser Ile Gly Val Leu Gly Val Ala Pro Ser Xaa Xaa Leu Tyr			689	
70	85	90	105	
gtt gta aaa gtt ctc ggt nnnnnnnn ggt tcc ggc sca tac agc tgg atc Ala Val Lys Val Leu Gly Xaa Xaa Gly Ser Gly Gln Tyr Ser Trp Ile			737	
95	100	105		
att aac gga atc gag tgg ggc atc gca aac aa' atg gac gtt att aac Ile Asn Gly Ile Glu Trp Ala Ile Ala Asn Asn Met Asp Val Ile Asn			785	
110	115	120		
atg agc ctc ggc gca acc tct ggt tct gct gct gca aas gcc gca gtt Met Ser Leu Gly Gly Pro Ser Gly Ser Ala Ala Leu Lys Ala Ala Val			833	
125	130	135		
gat aaa gcc gtt gca tcc ggc gtc gta gtc gtt gcg gca gcc ggt aac Asp Lys Ala Val Ala Ser Gly Val Val Val Ala Ala Ala Gly Asn			881	
140	145	150	155	
caa ggc nnnnnnnn ggc agc tca agc aca gtg ggc tac ctt ggt aaa tac Glu Gly Xaa Xaa Gly Ser Ser Ser Thr Val Gly Tyr Pro Gly Lys Tyr			929	
160	165	170		
cct tct gtc att gca gta ggc gct gtt gac agc agc aac aca agc gca Pro Ser Val Ile Ala Val Asp Ser Ser Asn Gln Arg Ala			977	

175	180	185	
tct tt> tca aac gta gga cct gag ctt gat gtc atg gca cct ggc gta Ser Phe Ser Ser Val Gly Pro Glu Leu Asp Val Met Ala Pro Gly Val ..90	190	200	1025
tct at> taa aac aac acg ctt cct gga aac aac tac ggg ggg tac uac ggt Ser Ile Gln Ser Thr Leu Pro Gly Asn Lys Tyr Gly Ala Tyr Asn Gly ..105	210	215	1073
agg tca itg gca tct ccg caa gtt gcc gga gcg gct gct ttg att ctt Thr Ser Met Ala Ser Pro His Val Ala Gly Ala Ala Leu Ile Leu ..120	225	230	1121
tct aag bac ccg aac tgg aca aac act caa gtc ccg aac agt tta nnn Ser Lys His Pro Asn Trp Thr Asn Thr Gln Val Arg Ser Ser Leu Kaa ..240	245	250	1169
aac acc act aca aaa ctt ggt jat tct ttc tac tat gga aaa ggg ctg Asn Thr Thr Lys Leu Gly Asp Ser Phe Tyr Tyr Gly Lys Gly Leu ..255	260	265	1217
at> aat tta cag ccg gca gct aac taa aacataaaaa accggccatttg Ile Asn Val Gln Ala Ala Ala Gln ..270	275		1264
gtccggccgg ttttttttatttttttttcc cgcatttttca atccgttcca taatccacgg atccgttccat ctggauattt taacgajaaa cgggggggttg accccggctca gtcccgttaac gtccaaatcc tgaaaatgtct caatccggcc ttccgggttt ccggtaact caatccgtta ..1324			1324
atccgttccat gatccggccg gatccggccg gatccggatc gatccggat c ..1334			1334
atccgttccat gatccggccg gatccggatc gatccggat c ..1444			1444
atccgttccat gatccggccg gatccggatc gatccggat c ..1495			1495
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<D17> Xaa = Asn or Pro			
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<D19> VARIANT			
<D20> (144)...(144)			
<D21> Xaa = Pro or Asn			
<D22>			
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<D24> (168)...(168)			
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<D27> VARIANT			
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421.0

421.1 VARIANT

421.2 (196)...(196)

421.3 Xaa = Ser or Ala

422.0

422.1 VARIANT

422.2 (205)...(205)

422.3 Xaa = Ala :: Asp

423.0

423.1 VARIANT

423.2 (206)...(206)

423.3 Xaa = Asp :: Ala

424.0

424.1 VARIANT

424.2 (205)...(205)

424.3 Xaa = Thr :: Ser

425.0

425.1 VARIANT

425.2 (206)...(206)

425.3 Xaa = Ser or Thr

426.0

426.1 VARIANT

426.2 (388)...(388)

426.3 Xaa = Gln or Glu

427.0

Met Arg Gly Lys Lys Val Trp Ile Ser Leu Leu Phe Ala Leu Ala Leu
5 10 15

Ile Phe Thr Met Ala Phe Gly Ser Thr Ser Ser Ala Gln Ala Ala Gly
20 25 30

Lys Ser Asn Gly Glu Lys Lys Tyr Ile Val Gly Phe Lys Gln Thr Met
35 40 45

Ser Thr Met Ser Ala Ala Lys Lys Asp Val Ile Ser Glu Lys Gly
50 55 60

Gly Lys Val Gln Lys Gln Phe Lys Tyr Val Asp Ala Ala Ser Ala Thr
65 70 75 80

Ile Asn Glu Lys Ala Val Lys Glu Leu Lys Lys Asp Pro Ser Val Ala
85 90 95

Tyr Val Glu Glu Asp His Val Ala His Ala Tyr Ala Gln Ser Val Pro
100 105 110

Tyr Gly Val Ser Gln Ile Lys Ala Pro Ala Leu His Ser Gln Gly Tyr
115 120 125

Thr Gly Ser Asn Val Lys Val Ala Val Ile Asp Ser Gly Ile Asp Ser
130 135 140

Ser His Pro Asp Leu Lys Val Ala Gly Gly Ala Ser Met Val Pro Ser
145 150 155 160

Glu Thr Xaa Xaa Phe Gln Asp Xaa Asn Ser His Gly Thr His Val Ala
165 170 175

Gly Thr Val Ala Ala Leu Asn Asn Ser Ile Gly Val Leu Gly Val Ala
180 185 190

Pro Ser Xaa Xaa Leu Tyr Ala Val Lys Val Leu Gly Xaa Xaa Gly Ser
195 200 205

Gly Gln Tyr Ser Trp Ile Ile Asn Gly Ile Glu Trp Ala Ile Ala Asn
210 215 220

Asn Met Asp Val Ile Asn Met Ser Leu Gly Gly Pro Ser Gly Ser Ala

225	230	235	240
Ala Leu Lys Ala Ala Val Asp Lys Ala Val Ala Ser Gly Val Val Val			
245	250	255	
Val Ala Ala Ala Gly Asn Glu Gly Xaa Xaa Gly Ser Ser Ser Thr Val			
260	265	270	
Gly Tyr Pro Gly Lys Tyr Pro Ser Val Ile Ala Val Gly Ala Val Asp			
275	280	285	
Ser Ser Asn Gln Arg Ala Ser Phe Ser Ser Val Gly Pro Gln Leu Asp			
290	295	300	
Val Met Ala Pro Gly Val Ser Ile Gln Ser Thr Ileu Pro Gly Asn Lys			
305	310	315	320
Tyr Gly Ala Tyr Asn Gly Thr Ser Met Ala Ser Pro His Val Ala Gly			
325	330	335	
Ala Ala Ala Leu Ile Leu Ser Lys His Pro Asn Trp Thr Asn Thr Gln			
340	345	350	
Val Arg Ser Ser Leu Xaa Asn Thr Thr Thr Lys Leu Gly Asp Ser Phe			
355	360	365	
Tyr Tyr Gly Lys Gly Leu Ile Asn Val Gln Ala Ala Ala Gln			
370	375	380	

410 - 5

411 - 175

412 - PRT

413 - *Bacillus amyloliquefaciens*

440 - 5

Ala Gln Ser Val Phe Tyr Gly Val Ser Gln Ile Lys Ala Pro Ala Leu			
5	10	15	

His Ser Gln Gly Tyr Thr Gly Ser Asn Val Lys Val Ala Val Ile Asp			
20	25	30	

Ser Gly Ile Asp Ser Ser His Pro Asp Leu Lys Val Ala Gly Gly Ala			
35	40	45	

Ser Met Val Pro Ser Glu Thr Asn Pro Phe Gln Asp Asn Asn Ser His			
50	55	60	

Gly Thr His Val Ala Gly Thr Val Ala Ala Leu Asn Asn Ser Ile Gly			
65	70	75	80

Val Leu Gly Val Ala Pro Ser Ala Ser Leu Tyr Ala Val Lys Val Leu			
85	90	95	

Gly Ala Asp Gly Ser Gly Gln Tyr Ser Trp Ile Ile Asn Gly Ile Glu			
100	105	110	

Trp Ala Ile Ala Asn Asn Met Asp Val Ile Asn Met Ser Leu Gly Gly			
115	120	125	

Pro Ser Gly Ser Ala Ala Leu Lys Ala Ala Val Asp Lys Ala Val Ala			
130	135	140	

Ser Gly Val Val Val Ala Ala Gly Asn Glu Gly Thr Ser Gly			
145	150	155	160

Ser Ser Ser Thr Val Gly Tyr Pro Gly Lys Tyr Pro Ser Val Ile Ala			
165	170	175	

Val Gly Ala Val Asp Ser Ser Asn Gln Arg Ala Ser Phe Ser Ser Val
180 185 190

Gly Pro Glu Leu Asp Val Met Ala Pro Gly Val Ser Ile Gin Ser Thr
195 200 205

Leu Pro Gly Asn Lys Tyr Gly Ala Tyr Asn Gly Thr Ser Met Ala Ser
210 215 220

Pro His Val Ala Gly Ala Ala Leu Ile Leu Ser Lys His Pro Asn
225 230 235 240

Tyr Thr Asn Thr Gln Val Arg Ser Ser Leu Glu Asn Thr Thr Thr Lys
245 250 255

Leu Gly Asp Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Asn Val Gin Ala
260 265 270

Ala Ala Gln
275

410.4

411.275

412. PRT

413. Bacillus subtilis

4470.4

Ala Gln Ser Val Pro Tyr Gly Ile Ser Gln Ile Lys Ala Pro Ala Leu
1 5 10 15

His Ser Gln Gly Tyr Thr Gly Ser Asn Val Lys Val Ala Val Ile Asp
20 25 30

Ser Gly Ile Asp Ser Ser His Pro Asp Leu Asn Val Arg Gly Gly Ala
35 40 45

Ser Phe Val Pro Ser Glu Thr Asn Pro Tyr Gln Asp Gly Ser Ser His
50 55 60

Gly Thr His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly
65 70 75 80

Val Leu Gly Val Ser Pro Ser Ala Ser Leu Tyr Ala Val Lys Val Leu
85 90 95

Asp Ser Thr Gly Ser Gly Glu Tyr Ser Trp Ile Ile Asn Gly Ile Glu
100 105 110

Trp Ala Ile Ser Asn Asn Met Asp Val Ile Asn Met Ser Leu Gly Gly
115 120 125

Pro Thr Gly Ser Thr Ala Leu Lys Thr Val Val Asp Lys Ala Val Ser
130 135 140

Ser Gly Ile Val Val Ala Ala Ala Gly Asn Gln Gly Ser Ser Gly
145 150 155 160

Ser Thr Ser Thr Val Gly Tyr Pro Ala Lys Tyr Pro Ser Thr Ile Ala

165	170	175	
Val Gly Ala Val Asn Ser Ser Asn Gin Arg Ala Ser Phe Ser Ser Ala			
180	185	190	
Gly Ser Glu Leu Asp Val Met Ala Pro Gly Val Ser Ile Gin Ser Thr			
195	200	205	
Ieu Pro Gly Gly Thr Tyr Gly Ala Tyr Asn Gly Thr Ser Met Ala Thr			
210	215	220	
Pro His Val Ala Gly Ala Ala Ala Leu Ile Leu Ser Lys His Pro Thr			
225	230	235	240
Trp Thr Asn Ala Gln Val Arg Asp Arg Leu Glu Ser Thr Ala Thr Tyr			
245	250	255	
Leu Gly Asn Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Asn Val Gln Ala			
260	265	270	
Ala Ala Gln			
275			
 Ala 10 - 5			
Ala 11 - 274			
Ala 12 - PRT			
Ala 13 - <i>Bacillus licheniformis</i>			
 <400 - 1			
Ala Gln Thr Val Pro Tyr Gly Ile Pro Leu Ile Lys Ala Asp Lys Val			
1	10	10	
Gln Ala Gln Gly Phe Lys Gly Ala Asn Val Lys Val Ala Val Leu Asp			
20	25	30	
Thr Gly Ile Gln Ala Ser His Pro Asp Leu Asn Val Val Gly Gly Ala			
35	40	45	
Ser Phe Val Ala Gly Glu Ala Tyr Asn Thr Asp Gly Asn Gly His Gly			
50	55	60	
Thr His Val Ala Gly Thr Val Ala Ala Leu Asp Asn Thr Thr Gly Val			
65	70	75	80
Leu Gly Val Ala Pro Ser Val Ser Leu Tyr Ala Val Lys Val Leu Asn			
85	90	95	
Ser Ser Gly Ser Gly Ser Tyr Ser Gly Ile Val Ser Gly Ile Glu Trp			
100	105	110	
Ala Thr Thr Asn Gly Met Asp Val Ile Asn Met Ser Leu Gly Gly Ala			
115	120	125	
Ser Gly Ser Thr Ala Met Lys Gln Ala Val Asp Asn Ala Tyr Ala Arg			
130	135	140	
Gly Val Val Val Ala Ala Gly Asn Ser Gly Asn Ser Gly Ser			
145	150	155	160

Thr Asn Thr Ile Gly Tyr Pro Ala Lys Tyr Asp Ser Val Ile Ala Val
165 170 175

Gly Ala Val Asp Ser Asn Ser Asn Arg Ala Ser Phe Ser Ser Val Gly
181 185 190

Ala Glu Leu Glu Val Met Ala Pro Gly Ala Gly Val Tyr Ser Thr Tyr
195 200 205

Pro Thr Asn Thr Tyr Ala Thr Leu Asn Gly Thr Ser Met Ala Ser Pro
210 215 220

His Val Ala Gly Ala Ala Ala Leu Ile Leu Ser Lys His Pro Asn Leu
225 230 235 240

Ser Ala Ser Gln Val Arg Asn Arg Leu Ser Ser Thr Ala Thr Tyr Leu
245 250 255

Gly Ser Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Ala Val Glu Ala Ala
260 265 270

Ala Gln

*210 - 6

*211 - 269

*212 - PRT

*213 - Bacillus lentinus

*400 - 6

Ala Gln Ser Val Pro Trp Gly Ile Ser Arg Val Gln Ala Pro Ala Ala
1 5 10 15

His Asn Arg Gly Leu Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp
20 25 30

Thr Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly Gly Ala Ser
35 40 45

Phe Val Pro Gly Glu Pro Ser Thr Gln Asp Gly Asn Gly His Gly Thr
50 55 60

His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly Val Leu
65 70 75 80

Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala
85 90 95

Ser Gly Ser Gly Ser Val Ser Ser Ile Ala Gln Gly Leu Glu Trp Ala
100 105 110

Gly Asn Asn Gly Met His Val Ala Asn Leu Ser Leu Gly Ser Pro Ser
115 120 125

Pro Ser Ala Thr Leu Glu Gln Ala Val Asn Ser Ala Thr Ser Arg Gly
130 135 140

Val Leu Val Val Ala Ala Ser Gly Asn Ser Gly Ala Gly Ser Ile Ser
145 150 155 160

Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val Gly Ala Thr Asp Gln
165 170 175

Ala Asn Asn Arg Ala Ser Phe Ser Gin Tyr Gly Ala Gly Leu Asp Ile
180 185 190

Val Ala Pro Gly Val Asn Val Gln Ser Thr Tyr Pro Gly Ser Thr Tyr
195 200 205

Ala Ser Leu Asn Gly Thr Ser Met Ala Thr Pro His Val Ala Gly Ala
210 215 220

Ala Ala Leu Val Lys Gln Lys Asn Pro Ser Trp Ser Asn Val Gln Ile
225 230 235 240

Arg Asn His Leu Lys Asn Thr Ala Thr Ser Leu Gly Ser Thr Asn Leu
245 250 255

Tyr Gly Ser Gly Leu Val Asn Ala Glu Ala Ala Th: Arg
260 265

<210> 7
<211> 15

<212> PPT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<210> 7

Ile Lys Asp Phe His Val Tyr Phe Arg Glu Ser Arg Asp Ala Gly
1 5 10 15

<211> 8

<212> 15

<213> PPT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<210> 8

Ile Glu Gln Ala Val Asn Ser Ala Thr Ser Arg Gly Val Leu Val
1 5 10 15

<211> 9

<212> 15

<213> PPT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

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Ala Gin Ser Val Pro Trp Gly Ile Ser Arg Val Gln Ala Pro Ala
1 5 10 15

<310> 10
<311> 15
<312> PPT
<313> Artificial Sequence

<314> 21
<315> Description of Artificial Sequence: Synthetic

<400> 11
Val Pro Trp Gly Ile Ser Arg Val Gln Ala Pro Ala Ala His Asn
1 5 10 15

<310> 11
<311> 15
<312> PPT
<313> Artificial Sequence

<314> 21
<315> Description of Artificial Sequence: Synthetic

<400> 11
Gly Ile Ser Arg Val Gln Ala Pro Ala Ala His Asn Arg Gly Leu
1 5 10 15

<310> 11
<311> 15
<312> PPT
<313> Artificial Sequence

<314> 21
<315> Description of Artificial Sequence: Synthetic

<400> 12
Arg Val Gln Ala Pro Ala Ala His Asn Arg Gly Leu Thr Gly Ser
1 5 10 15

<310> 13
<311> 15
<312> PPT
<313> Artificial Sequence

<314> 21
<315> Description of Artificial Sequence: Synthetic

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Ala Pro Ala Ala His Asn Arg Gly Leu Thr Gly Ser Gly Val Lys
1 5 10 15

<310> 14
<311> 15
<312> PPT
<313> Artificial Sequence

<220>

<403> Description of Artificial Sequence: Synthetic

<403> 14

Ala His Asn Arg Gly Leu Thr Gly Ser Gly Val Lys Val Ala Val
10 15

<404> 15

<404> 15

<404> FPT

<404> Artificial Sequence

<405>

<405> Description of Artificial Sequence: Synthetic

<406> 15

Arg Gly Leu Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp Thr
5 10 15

<407> 16

<407> 16

<407> FPT

<407> Artificial Sequence

<408>

<408> Description of Artificial Sequence: Synthetic

<409> 16

Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp Thr Gly Ile Ser
5 10 15

<410> 17

<410> 17

<410> FPT

<410> Artificial Sequence

<411>

<411> Description of Artificial Sequence: Synthetic

<400> 17

Gly Val Lys Val Ala Val Leu Asp Thr Gly Ile Ser Thr His Pro
1 5 10 15

<412> 18

<412> 18

<412> FPT

<412> Artificial Sequence

<413>

<413> Description of Artificial Sequence: Synthetic

<400> 18

Val Ala Val Leu Asp Thr Gly Ile Ser Thr His Pro Asp Leu Asn
1 5 10 15

<410> 19

4211> 15
4212> PFT
4213> Artificial Sequence

4214>
4215> Description of Artificial Sequence: Synthetic

4216> 19
Leu Asp Thr Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly
5 10 15

4217> 16
4218> 17
4219> PFT
4220> Artificial Sequence

4221>
4222> Description of Artificial Sequence: Synthetic

4223> 20
Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly Gly Ala Ser
5 10 15

4224> 21
4225> 18
4226> PFT
4227> Artificial Sequence

4228>
4229> Description of Artificial Sequence: Synthetic

4230> 21
Thr His Pro Asp Leu Asn Ile Arg Gly Gly Ala Ser Phe Val Pro
1 5 10 15

4231> 22
4232> 19
4233> PFT
4234> Artificial Sequence

4235>
4236> Description of Artificial Sequence: Synthetic

4237> 22
Asp Leu Asn Ile Arg Gly Gly Ala Ser Phe Val Pro Gly Glu Pro
1 5 10 15

4238> 23
4239> 19
4240> PFT
4241> Artificial Sequence

4242>
4243> Description of Artificial Sequence: Synthetic

4244> 23

Ile Arg Gly Gly Ala Ser Phe Val Pro Gly Glu Pro Ser Thr Gln
1 5 10 15

<110> 14
<111> 15
<112> PFT
<113> Artificial Sequence

<120>
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1 5 10 15

<140> 15
<141> 16
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<143> Artificial Sequence

<150>
<151> Description of Artificial Sequence: Synthetic

<160> 15
Phe Val Pro Gly Glu Pro Ser Thr Gln Asp Gly Asn Gly His Gly
1 5 10 15

<170> 16
<171> 17
<172> PFT
<173> Artificial Sequence

<180>
<181> Description of Artificial Sequence: Synthetic

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Gly Glu Pro Ser Thr Gln Asp Gly Asn Gly His Gly Thr His Val
1 5 10 15

<200> 17
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<202> PFT
<203> Artificial Sequence

<210>
<211> Description of Artificial Sequence: Synthetic

<220> 17
Ser Thr Gln Asp Gly Asn Gly His Gly Thr His Val Ala Gly Thr
1 5 10 15

<230> 28
<231> 15
<232> PFT
<233> Artificial Sequence

41208

4123 - Description of Artificial Sequence: Synthetic

41208 13

A^{sp} Gly Asn Gly His Gly Thr His Val Ala Gly Thr Ile Ala Ala

5

10

15

41208 13

41211 13

41212 PPT

4123 - Artificial Sequence

41208

4123 - Description of Artificial Sequence: Synthetic

41208 13

G^{ly} His Gly Thr His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn

5

10

15

41208 30

41211 15

41212 PPT

4123 - Artificial Sequence

41208

4123 - Description of Artificial Sequence: Synthetic

41208 30

Thr His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly

5

10

15

41208 31

41211 15

41212 PPT

4123 - Artificial Sequence

41208

4123 - Description of Artificial Sequence: Synthetic

41208 31

Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly Val Leu Gly

5

10

15

41208 32

41211 15

41212 PPT

4123 - Artificial Sequence

412

4123 - Description of Artificial Sequence: Synthetic

41208 32

Ile Ala Ala Leu Asn Asn Ser Ile Gly Val Leu Gly Val Ala Pro

5

10

15

4010 - 33
4011 - 15
4012 - PFT
4013 - Artificial Sequence

4020
4021 - Description of Artificial Sequence: Synthetic

4030 - 33
Leu Asn Asn Ser Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu
1 5 10 15

4040 - 34
Val Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala
1 5 10 15

4050 - 34
Val Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala
1 5 10 15

4060 - 35
Val Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val
1 5 10 15

4070 - 36
Val Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val
1 5 10 15

4080 - 36
Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala
1 5 10 15

4090 - 37
Val Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val
1 5 10 15

4100 - 37
Val Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val
1 5 10 15

<400> 37
Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala Ser Gly Ser
1 5 10 15

<213> 38
<211> 18
<212> PPT
<213> Artificial Sequence

<210>
<213> Description of Artificial Sequence: Synthetic

<400> 39
Ile₁ Tyr Ala Val Lys Val Leu Gly Ala Ser Gly Ser Gly Ser Val
5 10 15

<213> 39
<211> 18
<212> PPT
<213> Artificial Sequence

<210>
<213> Description of Artificial Sequence: Synthetic

<400> 40
Val Lys Val Leu Gly Ala Ser Gly Ser Gly Ser Val Ser Ser Ile
5 10 15

<213> 40
<211> 18
<212> PPT
<213> Artificial Sequence

<210>
<213> Description of Artificial Sequence: Synthetic

<400> 41
Ile₁ Gly Ala Ser Gly Ser Gly Ser Val Ser Ser Ile Ala Gln Gly
5 10 15

<213> 41
<211> 18
<212> PPT
<213> Artificial Sequence

<210>
<213> Description of Artificial Sequence: Synthetic

<400> 41
Ser Gly Ser Gly Ser Val Ser Ser Ile Ala Gln Gly Leu Glu Trp
1 5 10 15

<213> 42
<211> 18

<210> PPT

<211> Artificial Sequence

<212>

<213> Description of Artificial Sequence: Synthetic

<4> 42

Gly Ser Val Ser Ser Ile Ala Gln Gly Leu Glu Trp Ala Gly Asn
1 5 10 15

<210> 43

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<213> Description of Artificial Sequence: Synthetic

<4> 43

Ser Ser Ile Ala Gln Gly Leu Glu Trp Ala Gly Asn Asn Gly Met
1 5 10 15

<210> 44

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<213> Description of Artificial Sequence: Synthetic

<4> 44

Ala Gln Gly Leu Glu Trp Ala Gly Asn Asn Gly Met His Val Ala
1 5 10 15

<210> 45

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<213> Description of Artificial Sequence: Synthetic

<4> 45

Leu Glu Trp Ala Gly Asn Asn Gly Met His Val Ala Asn Leu Ser
1 5 10 15

<210> 46

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<213> Description of Artificial Sequence: Synthetic

<4> 46

Ala Gly Asn Asn Gly Met His Val Ala Asn Leu Ser Leu Gly Ser

1

5

10

15

<210> 47

<211> 15

<212> PPT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<400> 47

Asn Gly Met His Val Ala Asn Leu Ser Leu Gly Ser Pro Ser Pro
1 5 10 15

<210> 48

<211> 15

<212> PPT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<400> 48

His Val Ala Asn Leu Ser Leu Gly Ser Pro Ser Pro Ser Ala Thr
1 5 10 15

<210> 49

<211> 15

<212> PPT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<400> 49

Asn Leu Ser Leu Gly Ser Pro Ser Pro Ser Ala Thr Leu Glu Gln
1 5 10 15

<210> 50

<211> 15

<212> PPT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<400> 50

Leu Gly Ser Pro Ser Pro Ser Ala Thr Leu Glu Gln Ala Val Asn
1 5 10 15

<210> 51

<211> 15

<212> PPT

<213> Artificial Sequence

<L10>

<L3> Description of Artificial Sequence: Synthetic

<400> 51

Phe Ser Pro Ser Ala Thr Leu Glu Gln Ala Val Asn Ser Ala Thr
1 5 10 15

<L10> 52

<L11> 15

<L12> PFT

<L13> Artificial Sequence

<L10>

<L3> Description of Artificial Sequence: Synthetic

<400> 53

Ser Ala Thr Leu Glu Gln Ala Val Asn Ser Ala Thr Ser Arg Gly
1 5 10 15

<L10> 53

<L11> 15

<L12> PFT

<L13> Artificial Sequence

<L10>

<L3> Description of Artificial Sequence: Synthetic

<400> 53

Ileu Glu Gln Ala Val Asn Ser Ala Thr Ser Arg Gly Val Leu Val
1 5 10 15

<L10> 54

<L11> 15

<L12> PFT

<L13> Artificial Sequence

<L10>

<L3> Description of Artificial Sequence: Synthetic

<400> 54

Ala Val Asn Ser Ala Thr Ser Arg Gly Val Leu Val Val Ala Ala
1 5 10 15

<L10> 55

<L11> 15

<L12> PFT

<L13> Artificial Sequence

<L10>

<L3> Description of Artificial Sequence: Synthetic

<400> 55

Ser Ala Thr Ser Arg Gly Val Leu Val Val Ala Ala Ser Gly Asn
1 5 10 15

• 210• 56
• 110• 15
• 120• PFT
• 130• Artificial Sequence

• 210•
• 220• Description of Artificial Sequence: Synthetic

• 400• 56
Ser Arg Gly Val Leu Val Val Ala Ala Ser Gly Asn Ser Gly Ala
 1 10 15

• 210• 57
• 110• 15
• 120• PFT
• 130• Artificial Sequence

• 210•
• 220• Description of Artificial Sequence: Synthetic

• 400• 57
Val Ieu Val Val Ala Ala Ser Gly Asn Ser Gly Ala Gly Ser Ile
 5 10 15

• 210• 58
• 110• 15
• 120• PFT
• 130• Artificial Sequence

• 210•
• 220• Description of Artificial Sequence: Synthetic

• 400• 58
Val Ala Ala Ser Gly Asn Ser Gly Ala Gly Ser Ile Ser Tyr Pro
 1 5 10 15

• 210• 59
• 110• 15
• 120• PFT
• 130• Artificial Sequence

• 210•
• 220• Description of Artificial Sequence: Synthetic

• 400• 59
Ser Gly Asn Ser Gly Ala Gly Ser Ile Ser Tyr Pro Ala Arg Tyr
 1 5 10 15

• 210• 60
• 110• 15
• 120• PFT
• 130• Artificial Sequence

• 210•
• 220• Description of Artificial Sequence: Synthetic

<400> 60
Ser Gly Ala Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala
5 10 15

<410> 61
<411> 15
<412> PPT
<413> Artificial Sequence

<410>
<423> Description of Artificial Sequence: Synthetic

<400> 61
Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
5 10 15

<410> 61
<411> 15
<412> PPT
<413> Artificial Sequence

<410>
<423> Description of Artificial Sequence: Synthetic

<400> 62
Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val Gly Ala Thr
5 10 15

<410> 62
<411> 15
<412> PPT
<413> Artificial Sequence

<410>
<423> Description of Artificial Sequence: Synthetic

<400> 63
Ala Arg Tyr Ala Asn Ala Met Ala Val Gly Ala Thr Asp Gln Asn
1 5 10 15

<410> 64
<411> 15
<412> PPT
<413> Artificial Sequence

<410>
<423> Description of Artificial Sequence: Synthetic

<400> 64
Ala Asn Ala Met Ala Val Gly Ala Thr Asp Gln Asn Asn Asn Arg
1 5 10 15

<410> 65
<411> 15
<412> PPT

4213 Artificial Sequence

4214

4215 Description of Artificial Sequence: Synthetic

4001-65

Met Ala Val Gly Ala Thr Asp Gln Asn Asn Asn Arg Ala Ser Phe
1 5 10 15

4216

4217

4218 PFT

4219 Artificial Sequence

4220

4221 Description of Artificial Sequence: Synthetic

4002-66

Gly Ala Thr Asp Gln Asn Asn Asn Arg Ala Ser Phe Ser Gln Tyr
1 5 10 15

4222

4223

4224 PFT

4225 Artificial Sequence

4226

4227 Description of Artificial Sequence: Synthetic

4003-67

Asp Gln Asn Asn Asn Arg Ala Ser Phe Ser Gln Tyr Gly Ala Gly
1 5 10 15

4228

4229

4230 PFT

4231 Artificial Sequence

4232

4233 Description of Artificial Sequence: Synthetic

4004-68

Asn Asn Arg Ala Ser Phe Ser Gln Tyr Gly Ala Gly Leu Asp Ile
1 5 10 15

4234

4235

4236 PFT

4237 Artificial Sequence

4238

4239 Description of Artificial Sequence: Synthetic

4005-69

Ala Ser Phe Ser Gln Tyr Gly Ala Gly Leu Asp Ile Val Ala Pro
1 5 10 15

<10> 70
<11> 19
<12> PRT
<13> Artificial Sequence

<210>
<213> Description of Artificial Sequence: Synthetic

<400> 70
Ser Gln Tyr Gly Ala Gly Leu Asp Ile Val Ala Pro Gly Val Asn
1 5 10 15

<10> 71
<11> 18
<12> PRT
<13> Artificial Sequence

<210>
<213> Description of Artificial Sequence: Synthetic

<400> 71
Gly Ala Gly Leu Asp Ile Val Ala Pro Gly Val Asn Val Gln Ser
1 5 10 15

<10> 72
<11> 18
<12> PRT
<13> Artificial Sequence

<210>
<213> Description of Artificial Sequence: Synthetic

<400> 72
Leu Asp Ile Val Ala Pro Gly Val Asn Val Gln Ser Thr Tyr Pro
1 5 10 15

<10> 73
<11> 18
<12> PRT
<13> Artificial Sequence

<210>
<213> Description of Artificial Sequence: Synthetic

<400> 73
Val Ala Pro Gly Val Asn Val Gln Ser Thr Tyr Pro Gly Ser Thr
1 5 10 15

<10> 74
<11> 18
<12> PRT
<13> Artificial Sequence

<210>

4010 15
4012 PPT
4013 Artificial Sequence

4020
4023 Description of Artificial Sequence: Synthetic

4030 79
Leu Asn Gly Thr Ser Met Ala Thr Pro His Val Ala Gly Ala Ala
1 5 10 15

4040 80
4041 15
4042 PPT
4043 Artificial Sequence

4050 80
4053 Description of Artificial Sequence: Synthetic

4060 80
Thr Ser Met Ala Thr Pro His Val Ala Gly Ala Ala Ala Leu Val
1 5 10 15

4070 81
4071 15
4072 PPT
4073 Artificial Sequence

4080 81
4083 Description of Artificial Sequence: Synthetic

4090 81
Ala Thr Pro His Val Ala Gly Ala Ala Ala Leu Val Lys Gln Lys
1 5 10 15

4100 82
4101 15
4102 PPT
4103 Artificial Sequence

4110 82
4113 Description of Artificial Sequence: Synthetic

4120 82
Gly Val Ala Gly Ala Ala Ala Leu Val Lys Gln Lys Asn Pro Ser
1 5 10 15

4130 83
4131 15
4132 PPT
4133 Artificial Sequence

4140 83
4143 Description of Artificial Sequence: Synthetic

4150 83

Gly Ala Ala Ala Leu Val Lys Gln Lys Asn Pro Ser Trp Ser Asn
5 10 15

.62.0 - 84
.62.1 - 15
.62.2 - PFT
.62.3 - Artificial Sequence

.62.4 -
.62.5 - Description of Artificial Sequence: Synthetic

.64.0 - 84
Ala Leu Val Lys Gln Lys Asn Pro Ser Trp Ser Asn Val Gln Ile
5 10 15

.64.1 - 85
.64.2 - 15
.64.3 - PFT
.64.4 - Artificial Sequence

.64.5 -
.64.6 - Description of Artificial Sequence: Synthetic

.64.7 - 85
Lys Gln Lys Asn Pro Ser Trp Ser Val Asn Gln Ile Arg Asn His
1 5 10 15

.64.8 - 86
.64.9 - 15
.64.10 - PFT
.64.11 - Artificial Sequence

.64.12 -
.64.13 - Description of Artificial Sequence: Synthetic

.64.14 - 86
Asn Pro Ser Trp Ser Asn Val Gln Ile Arg Asn His Leu Lys Asn
5 10 15

.64.15 - 87
.64.16 - 15
.64.17 - PFT
.64.18 - Artificial Sequence

.64.19 -
.64.20 - Description of Artificial Sequence: Synthetic

.64.21 - 87
Trp Ser Asn Val Gln Ile Arg Asn His Leu Lys Asn Thr Ala Thr
1 5 10 15

.64.22 - 88
.64.23 - 15
.64.24 - PFT
.64.25 - Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<212> 83

Val Gln Ile Arg Asn His Leu Lys Asn Thr Ala Thr Ser Leu Gly
1 5 10 15

<210> 84

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<212> 85

Arg Asn His Leu Lys Asn Thr Ala Thr Ser Leu Gly Ser Thr Asn
1 5 10 15

<210> 86

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<212> 87

Leu Lys Asn Thr Ala Thr Ser Leu Gly Ser Thr Asn Leu Tyr Gly
1 5 10 15

<210> 88

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<212> 89

Thr Ala Thr Ser Leu Gly Ser Thr Asn Leu Tyr Gly Ser Gly Leu
1 5 10 15

<210> 90

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<212> 91

Ser Leu Gly Ser Thr Asn Leu Tyr Gly Ser Gly Leu Val Asn Ala
1 5 10 15

4210> 93
4211> 15
4212> PPT
4213> Artificial Sequence

4214>
4215> Description of Artificial Sequence: Synthetic

4216> 95
4217> Ser Thr Asn Leu Tyr Gly Ser Gly Leu Val Asn Ala Glu Ala Ala
1 5 10 15

4218> 94
4219> 15
4220> PPT
4221> Artificial Sequence

4222>
4223> Description of Artificial Sequence: Synthetic

4224> 94
4225> Asn Leu Tyr Gly Ser Gly Leu Val Asn Ala Glu Ala Ala Thr Arg
1 5 10 15

4226> 95
4227> 15
4228> PPT
4229> Artificial Sequence

4230>
4231> Description of Artificial Sequence: Synthetic

4232> 95
4233> Asp Ala Glu Leu His Ile Phe Arg Val Phe Thr Asn Asn Gln Val
1 5 10 15

4234> 96
4235> 16
4236> PPT
4237> Artificial Sequence

4238>
4239> Description of Artificial Sequence: Synthetic

4240> 96
4241> Pro Leu Arg Arg Ala Ser Leu Ser Leu Gly Ser Gly Phe Trp His
1 5 10 15

4242> 97
4243> 15
4244> PPT
4245> Artificial Sequence

4246>
4247> Description of Artificial Sequence: Synthetic

<400> 97
Arg Ala Ser Leu Ser Leu Gly Ser Gly Phe Trp His Ala Thr Gly
10 15 20

<400> 98
<211> 15
<212> PPT
<213> Artificial Sequence

<400>
<213> Description of Artificial Sequence: Synthetic

<400> 98
Leu Ser Leu Gly Ser Gly Phe Trp His Ala Thr Gly Arg His Ser
5 10 15

<400> 99
<211> 15
<212> PPT
<213> Artificial Sequence

<400>
<213> Description of Artificial Sequence: Synthetic

<400> 99
Gly Ser Gly Phe Trp His Ala Thr Gly Arg His Ser Ser Arg Arg
5 10 15

<400> 100
<211> 15
<212> PPT
<213> Artificial Sequence

<400>
<213> Description of Artificial Sequence: Synthetic

<400> 100
Phe Trp His Ala Thr Gly Arg His Ser Ser Arg Arg Leu Leu Arg
5 10 15

<400> 101
<211> 15
<212> PPT
<213> Artificial Sequence

<400>
<213> Description of Artificial Sequence: Synthetic

<400> 101
Ala Thr Gly Arg His Ser Ser Arg Arg Leu Leu Arg Ala Ile Pro
1 5 10 15

<400> 102
<211> 15

40128 PPT

40128 Artificial Sequence

40129

40129 Description of Artificial Sequence: Synthetic

40129 102

Arg His Ser Ser Arg Arg Leu Leu Arg Ala Ile Pro Arg Gln Val
10 15

40129 103

40129 15

40129 PPT

40129 Artificial Sequence

40129

40129 Description of Artificial Sequence: Synthetic

40129 103

Ser Arg Arg Leu Leu Arg Ala Ile Pro Arg Gln Val Ala Gln Thr
1 5 10 15

40129 104

40129 15

40129 PPT

40129 Artificial Sequence

40129

40129 Description of Artificial Sequence: Synthetic

40129 104

Leu Leu Arg Ala Ile Pro Arg Gln Val Ala Gln Thr Leu Gln Ala
1 5 10 15

40129 105

40129 15

40129 PPT

40129 Artificial Sequence

40129

40129 Description of Artificial Sequence: Synthetic

40129 105

Ala Ile Pro Arg Gln Val Ala Gln Thr Leu Gln Ala Asp Val Leu
1 5 10 15

40129 106

40129 15

40129 PPT

40129 Artificial Sequence

40129

40129 Description of Artificial Sequence: Synthetic

40129 106

Arg Gln Val Ala Gln Thr Leu Gln Ala Asp Val Leu Trp Gln Met

1

5

10

15

<210> 107

<211> 15

<212> PFT

<213> Artificial Sequence

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<214> Description of Artificial Sequence: Synthetic

<400> 107

Ala Gln Thr Leu Gln Ala Asp Val Leu Trp Gln Met Gly Tyr Thr
10 15

<210> 108

<211> 15

<212> PFT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<400> 108

Leu Gln Ala Asp Val Leu Trp Gln Met Gly Tyr Thr Gly Ala Asn
10 15

<210> 109

<211> 15

<212> PFT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<400> 109

Asp Val Leu Trp Gln Met Gly Tyr Thr Gly Ala Asn Val Arg Val
1 5 10 15

<210> 110

<211> 15

<212> PFT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<400> 110

Trp Gln Met Gly Tyr Thr Gly Ala Asn Val Arg Val Ala Val Phe
1 3 10 15

<210> 111

<211> 15

<212> PFT

<213> Artificial Sequence

<D2> Description of Artificial Sequence: Synthetic

<D3> <D4> 111
Gly Tyr Thr Gly Ala Asn Val Arg Val Ala Val Phe Asp Thr Gly
10 15
1

<D10> 112
<D11> 15
<D12> PRT
<D13> Artificial Sequence

<D14> Description of Artificial Sequence: Synthetic

<D15> <D4> 112
Gly Ala Asn Val Arg Val Ala Val Phe Asp Thr Gly Leu Ser Glu
10 15
1

<D10> 113
<D11> 15
<D12> PRT
<D13> Artificial Sequence

<D14> Description of Artificial Sequence: Synthetic

<D15> <D4> 113
Val Arg Val Ala Val Phe Asp Thr Gly Leu Ser Glu Lys His Pro
10 15
1

<D10> 114
<D11> 15
<D12> PRT
<D13> Artificial Sequence

<D14> Description of Artificial Sequence: Synthetic

<D15> <D4> 114
Ala Val Phe Asp Thr Gly Leu Ser Glu Lys His Pro His Phe Lys
10 15
1

<D10> 115
<D11> 15
<D12> PRT
<D13> Artificial Sequence

<D14> Description of Artificial Sequence: Synthetic

<D15> <D4> 115
Asp Thr Gly Leu Ser Glu Lys His Pro His Phe Lys Asn Val Lys
10 15
1

<210> 116
<211> 15
<212> PRT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

<400> 116
Leu Ser Glu Lys His Pro His Phe Lys Asn Val Lys Glu Arg Thr
10
5
1

<210> 117
<211> 15
<212> PRT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

<400> 117
Lys His Pro His Phe Lys Asn Val Lys Glu Arg Thr Asn Trp Thr
10
5
1

<210> 118
<211> 15
<212> PRT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

<400> 118
His Phe Lys Asn Val Lys Glu Arg Thr Asn Trp Thr Asn Glu Arg
10
5
1

<210> 119
<211> 15
<212> PRT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

<400> 119
Asn Val Lys Glu Arg Thr Asn Trp Thr Asn Glu Arg Thr Leu Asp
10
5
1

<210> 120
<211> 15
<212> PRT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

• 400 • 120
Glu Arg Thr Asn Trp Thr Asn Glu Arg Thr Leu Asp Asp Gly Leu
1 5 10 15

• 210 • 1.1
• 211 • 15
• 212 • PRT
• 213 • Artificial Sequence

• 220 •
• 223 • Description of Artificial Sequence: Synthetic

• 401 • 1.1
Asn Trp Thr Asn Glu Arg Thr Leu Asp Asp Gly Leu Gly His Gly
1 5 10 15

• 210 • 1.2
• 211 • 15
• 212 • PRT
• 213 • Artificial Sequence

• 220 •
• 223 • Description of Artificial Sequence: Synthetic

• 402 • 1.2
Asn Glu Arg Thr Leu Asp Asp Gly Leu Gly His Gly Thr Phe Val
1 5 10 15

• 210 • 1.3
• 211 • 15
• 212 • PRT
• 213 • Artificial Sequence

• 220 •
• 223 • Description of Artificial Sequence: Synthetic

• 4 • 113
Thr Leu Asp Asp Gly Leu Gly His Gly Thr Phe Val Ala Gly Val
1 5 10 15

• 210 • 1.4
• 211 • 15
• 212 • PRT
• 213 • Artificial Sequence

• 220 •
• 223 • Description of Artificial Sequence: Synthetic

• 400 • 114
Asp Gly Leu Gly His Gly Thr Phe Val Ala Gly Val Ile Ala Ser
1 5 10 15

• 210 • 125
• 211 • 15
• 212 • PRT

<210> Artificial Sequence

<211> Description of Artificial Sequence: Synthetic

<400> 125

Ala His Gly Thr Phe Val Ala Gly Val Ile Ala Ser Met Arg Glu
5 10 15

<210> 126

<211> 18

<212> PPT

<213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<400> 126

Thr Phe Val Ala Gly Val Ile Ala Ser Met Arg Glu Cys Gln Gly
5 10 15

<210> 127

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<400> 127

Ala Gly Val Ile Ala Ser Met Arg Glu Cys Gln Gly Phe Ala Pro
1 5 10 15

<210> 128

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<400> 128

Ile Ala Ser Met Arg Glu Cys Gln Gly Phe Ala Pro Asp Ala Glu
1 5 10 15

<210> 129

<211> 15

<212> PPT

<213> Artificial Sequence

<210>

<211> Description of Artificial Sequence: Synthetic

<400> 129

Met Arg Glu Cys Gln Gly Phe Ala Pro Asp Ala Glu Leu His Ile
1 5 10 15

<219> 120

<211> 15

<212> PPT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<216> 130

Phe Gln Gly Phe Ala Pro Asp Ala Glu Leu His Ile Phe Arg Val
1 5 10 15

<217> 131

<218> 15

<219> PPT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<216> 131

Phe Ala Pro Asp Ala Glu Leu His Ile Phe Arg Val Phe Thr Asn
1 5 10 15

<217> 132

<218> 15

<219> PPT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<216> 132

Asp Ala Glu Leu His Ile Phe Arg Val Phe Thr Asn Asn Gln Val
1 5 10 15

<217> 133

<218> 15

<219> PPT

<213> Artificial Sequence

<214>

<215> Description of Artificial Sequence: Synthetic

<216> 133

Leu His Ile Phe Arg Val Phe Thr Asn Asn Gln Val Ser Tyr Thr
1 5 10 15

<217> 134

<218> 15

<219> PPT

<213> Artificial Sequence

<214>

<403> Description of Artificial Sequence: Synthetic

<410> 134

Phe Arg Val Phe Thr Asn Asn Gln Val Ser Tyr Thr Ser Trp Phe
10 15

<410> 135

<411> 15

<412> PFT

<413> Artificial Sequence

<414>

<415> Description of Artificial Sequence: Synthetic

<416> 135

Thr Thr Asn Asn Gln Val Ser Tyr Thr Ser Trp Phe Leu Asp Ala
10 15

<417> 136

<418> 15

<419> PFT

<420> Artificial Sequence

<421>

<422> Description of Artificial Sequence: Synthetic

<423> 136

Asn Gln Val Ser Tyr Thr Ser Trp Phe Leu Asp Ala Phe Asn Tyr
1 5 10 15

<424> 137

<425> 15

<426> PFT

<427> Artificial Sequence

<428>

<429> Description of Artificial Sequence: Synthetic

<430> 137

Ser Tyr Thr Ser Trp Phe Leu Asp Ala Phe Asn Tyr Ala Ile Leu
1 5 10 15

<431> 138

<432> 15

<433> PFT

<434> Artificial Sequence

<435>

<436> Description of Artificial Sequence: Synthetic

<437> 138

Ser Trp Phe Leu Asp Ala Phe Asn Tyr Ala Ile Leu Lys Lys Ile
1 5 10 15

<438> 139

4211> 15
4212> PPT
4213> Artificial Sequence

4214>
4215> Description of Artificial Sequence: Synthetic

4216> 139
Leu Asp Ala Phe Asn Tyr Ala Ile Leu Lys Lys Ile Asp Val Leu
1 5 10 15

4217> 140
4218> 141
4219> PPT
4220> Artificial Sequence

4221>
4222> Description of Artificial Sequence: Synthetic

4223> 140
Phe Asn Tyr Ala Ile Leu Lys Lys Ile Asp Val Leu Asn Leu Ser
1 5 10 15

4224> 141
4225> 15
4226> PPT
4227> Artificial Sequence

4228>
4229> Description of Artificial Sequence: Synthetic

4230> 141
Ala Ile Leu Lys Lys Ile Asp Val Leu Asn Leu Ser Ile Gly Gly
1 5 10 15

4231> 142
4232> 15
4233> PPT
4234> Artificial Sequence

4235>
4236> Description of Artificial Sequence: Synthetic

4237> 142
Lys Lys Ile Asp Val Leu Asn Leu Ser Ile Gly Gly Pro Asp Phe
1 5 10 15

4238> 143
4239> 15
4240> PPT
4241> Artificial Sequence

4242>
4243> Description of Artificial Sequence: Synthetic

4244> 143

Asp Val Leu Asn Leu Ser Ile Gly Gly Pro Asp Phe Met Asp His
1 5 10 15

<D10> 144
<D11> 15
<D12> PPT
<D13> Artificial Sequence

<D20>
<D23> Description of Artificial Sequence: Synthetic

<D30> 144
Asn Leu Ser Ile Gly Gly Pro Asp Phe Met Asp His Pro Phe Val
1 5 10 15

<D10> 145
<D11> 15
<D12> PPT
<D13> Artificial Sequence

<D20>
<D23> Description of Artificial Sequence: Synthetic

<D30> 145
Ile Gly Gly Pro Asp Phe Met Asp His Pro Phe Val Asp Lys Val
1 5 10 15

<D10> 146
<D11> 15
<D12> PPT
<D13> Artificial Sequence

<D20>
<D23> Description of Artificial Sequence: Synthetic

<D30> 146
Pro Asp Phe Met Asp His Pro Phe Val Asp Lys Val Trp Glu Leu
1 5 10 15

<D10> 147
<D11> 15
<D12> PPT
<D13> Artificial Sequence

<D20>
<D23> Description of Artificial Sequence: Synthetic

<D30> 147
Met Asp His Pro Phe Val Asp Lys Val Trp Glu Leu Thr Ala Asn
1 5 10 15

<D10> 148
<D11> 15
<D12> PPT
<D13> Artificial Sequence

420

421 - Description of Artificial Sequence: Synthetic

422 - 148

Pro Phe Val Asp Lys Val Trp Glu Leu Thr Ala Asn Asn Val Ile
10 15

423 - 149

424 - 15

425 - PPT

426 - Artificial Sequence

427

428 - Description of Artificial Sequence: Synthetic

429 - 149

Asp Lys Val Trp Glu Leu Thr Ala Asn Asn Val Ile Met Val Ser
10 15

430 - 150

431 - 15

432 - PPT

433 - Artificial Sequence

434

435 - Description of Artificial Sequence: Synthetic

436 - 150

Trp Glu Leu Thr Ala Asn Asn Val Ile Met Val Ser Ala Ile Gly
1 5 10 15

437 - 151

438 - 15

439 - PPT

440 - Artificial Sequence

441

442 - Description of Artificial Sequence: Synthetic

443 - 151

Thr Ala Asn Asn Val Ile Met Val Ser Ala Ile Gly Asn Asp Gly
1 5 10 15

444 - 152

445 - 15

446 - PPT

447 - Artificial Sequence

448

449 - Description of Artificial Sequence: Synthetic

450 - 152

Asn Val Ile Met Val Ser Ala Ile Gly Asn Asp Gly Pro Leu Tyr
1 5 10 15

<110> 153
<111> 15
<112> PFT
<113> Artificial Sequence

<114>
<115> Description of Artificial Sequence: Synthetic

<116> 153
Met Val Ser Ala Ile Gly Asn Asp Gly Pro Leu Tyr Gly Thr Ile
1 5 10 15

<117> 154
<118> 15
<119> PFT
<120> Artificial Sequence

<121>
<122> Description of Artificial Sequence: Synthetic

<123> 154
Ala Ile Gly Asn Asp Gly Pro Leu Tyr Gly Thr Leu Asn Asn Pro
1 5 10 15

<124> 155
<125> 15
<126> PFT
<127> Artificial Sequence

<128>
<129> Description of Artificial Sequence: Synthetic

<130> 155
Asn Asp Gly Pro Leu Tyr Gly Thr Leu Asn Asn Pro Ala Asp Gln
1 5 10 15

<131> 156
<132> 15
<133> PFT
<134> Artificial Sequence

<135>
<136> Description of Artificial Sequence: Synthetic

<137> 156
Pro Leu Tyr Gly Thr Leu Asn Asn Pro Ala Asp Gln Met Asp Val
1 5 10 15

<138> 157
<139> 15
<140> PFT
<141> Artificial Sequence

<142>
<143> Description of Artificial Sequence: Synthetic

<400> 157
Gly Thr Leu Asn Asn Pro Ala Asp Gln Met Asp Val Ile Gly Val
10 15

<210> 158
<211> 15
<212> PRT
<213> Artificial Sequence

<400>
<214> Description of Artificial Sequence: Synthetic

<215> 159
Asn Asn Pro Ala Asp Gln Met Asp Val Ile Gly Val Gly Gly Ile
10 15

<210> 159
<211> 15
<212> PRT
<213> Artificial Sequence

<400>
<214> Description of Artificial Sequence: Synthetic

<215> 159
Ala Asp Gln Met Asp Val Ile Gly Val Gly Gly Ile Asp Phe Glu
10 15

<210> 160
<211> 15
<212> PRT
<213> Artificial Sequence

<400>
<214> Description of Artificial Sequence: Synthetic

<215> 160
Met Asp Val Ile Gly Val Gly Gly Ile Asp Phe Glu Asp Asn Ile
10 15

<210> 161
<211> 15
<212> PRT
<213> Artificial Sequence

<400>
<214> Description of Artificial Sequence: Synthetic

<215> 161
Ile Gly Val Gly Gly Ile Asp Phe Glu Asp Asn Ile Ala Arg Phe
1 5 10 15

<210> 162
<211> 15

III. PPT

III. Artificial Sequence

4.1(2) Description of Artificial Sequence: Synthetic

Gly Gly Ile Asp Phe Glu Asp Asn Ile Ala Arg Phe Ser Ser Arg
5 10 15

• 111-163
• 112-15
• 213- PFT
• 213- Artificial Sequence

III. Description of Artificial Sequence: Synthetic

Asp Phe Glu Asp Asn Ile Ala Arg Phe Ser Ser Arg Gly Met Thr
 1 5 10 15

• 164
• 18
• PFT
• Artificial Sequence

3.3. Description of Artificial Sequence: Synthetic

Asp Asn Ile Ala Arg Phe Ser Ser Arg Gly Met Thr Thr Trp Glu
5 10 15

* 2160-165
* 2170-15
* 2180-PFT
* 2190-Artificial Sequence

Table 3. Description of Artificial Sequence: Synthetic

Ala Arg Phe Ser Ser Arg Gly Met Thr Thr Trp Glu Leu Pro Gly
1 5 10 15

2010-166
2011-11
2012-PBF
2013-Artificial Sequence

223. Description of Artificial Sequence: Synthetic

· 400 · 165
Ser Ser Arg Gly Met Thr Thr Trp Glu Leu Pro Gly Gly Tyr Gly

1

5

10

15

<210> 167

<211> 18

<212> PFT

<213> Artificial Sequence

<210>

<213> Description of Artificial Sequence: Synthetic

<210> 167

Gly Met Thr Thr Trp Glu Leu Pro Gly Gly Tyr Gly Arg Met Lys
! 5 10 15

<210> 168

<211> 18

<212> PFT

<213> Artificial Sequence

<210>

<213> Description of Artificial Sequence: Synthetic

<210> 168

Thr Trp Glu Leu Pro Gly Gly Tyr Gly Arg Met Lys Pro Asp Ile
! 5 10 15

<210> 169

<211> 18

<212> PFT

<213> Artificial Sequence

<210>

<213> Description of Artificial Sequence: Synthetic

<210> 169

Ile Pro Gly Gly Tyr Gly Arg Met Lys Pro Asp Ile Val Thr Tyr
! 5 10 15

<210> 170

<211> 18

<212> PFT

<213> Artificial Sequence

<210>

<213> Description of Artificial Sequence: Synthetic

<210> 170

Gly Tyr Gly Arg Met Lys Pro Asp Ile Val Thr Tyr Gly Ala Gly
1 5 10 15

<210> 171

<211> 18

<212> PFT

<213> Artificial Sequence

4220>

<210> Description of Artificial Sequence: Synthetic

4300> 171

Arg Met Lys Pro Asp Ile Val Thr Tyr Gly Ala Gly Val Arg Gly
1 5 10 15

4310> 172

4311> 15

4312> PPT

4313> Artificial Sequence

4320>

<210> Description of Artificial Sequence: Synthetic

4330> 172

Pro Asp Ile Val Thr Tyr Gly Ala Gly Val Arg Gly Ser Gly Val
1 5 10 15

4340> 173

4341> 15

4342> PPT

4343> Artificial Sequence

4350>

<210> Description of Artificial Sequence: Synthetic

4360> 173

Val Thr Tyr Gly Ala Gly Val Arg Gly Ser Gly Val Lys Gly Gly
1 5 10 15

4370> 174

4371> 15

4372> PPT

4373> Artificial Sequence

4380>

<210> Description of Artificial Sequence: Synthetic

4390> 174

Gly Ala Gly Val Arg Gly Ser Gly Val Lys Gly Gly Cys Arg Ala
1 5 10 15

4400> 175

4401> 15

4402> PPT

4403> Artificial Sequence

4410>

<210> Description of Artificial Sequence: Synthetic

4420> 175

Val Arg Gly Ser Gly Val Lys Gly Gly Cys Arg Ala Leu Ser Gly
1 5 10 15

4210- 176
4211- 15
4212- PFT
4213- Artificial Sequence

4214-
4215- Description of Artificial Sequence: Synthetic

4216- 176
4217 Gly Val Lys Gly Gly Cys Arg Ala Leu Ser Gly Thr Ser Val
1 5 10 15

4218- 177
4219- 15
4220- PFT
4221- Artificial Sequence

4222-
4223- Description of Artificial Sequence: Synthetic

4224- 177
4225 Lys Gly Gly Cys Arg Ala Leu Ser Gly Thr Ser Val Ala Ser Pro
1 5 10 15

4226- 178
4227- 15
4228- PFT
4229- Artificial Sequence

4230-
4231- Description of Artificial Sequence: Synthetic

4232- 178
4233 Lys Arg Ala Leu Ser Gly Thr Ser Val Ala Ser Pro Val Val Ala
1 5 10 15

4234- 179
4235- 15
4236- PFT
4237- Artificial Sequence

4238-
4239- Description of Artificial Sequence: Synthetic

4240- 179
4241 Leu Ser Gly Thr Ser Val Ala Ser Pro Val Val Ala Gly Ala Val
1 5 10 15

4242- 180
4243- 15
4244- PFT
4245- Artificial Sequence

4246-
4247- Description of Artificial Sequence: Synthetic

<400> 180
Thr Ser Val Ala Ser Pro Val Val Ala Gly Ala Val Thr Leu Ieu
10 15

<410> 181
<411> 15
<412> PPT
<413> Artificial Sequence

<414>
<415> Description of Artificial Sequence: Synthetic

<416> 182
Ala Ser Pro Val Val Ala Gly Ala Val Thr Leu Leu Val Ser Thr
10 15

<417> 183
<418> 15
<419> PPT
<420> Artificial Sequence

<421>
<422> Description of Artificial Sequence: Synthetic

<423> 183
Val Val Ala Gly Ala Val Thr Leu Leu Val Ser Thr Val Gln Lys
10 15

<424> 183
<425> 15
<426> PPT
<427> Artificial Sequence

<428>
<429> Description of Artificial Sequence: Synthetic

<430> 183
Gly Ala Val Thr Leu Leu Val Ser Thr Val Gln Lys Arg Glu Leu
10 15

<431> 184
<432> 15
<433> PPT
<434> Artificial Sequence

<435>
<436> Description of Artificial Sequence: Synthetic

<437> 184
Thr Leu Leu Val Ser Thr Val Gln Lys Arg Glu Leu Val Asn Pro
1 5 10 15

<438> 185
<439> 15
<440> PPT

.113 Artificial Sequence

.20.

.113 Description of Artificial Sequence: Synthetic

.400-185

Val Ser Thr Val Glu Lys Arg Glu Leu Val Asn Pro Ala Ser Met
1 5 10 15

.110-186

.111-15

.112 PPT

.113 Artificial Sequence

.114.

.113 Description of Artificial Sequence: Synthetic

.400-186

Val Gln Lys Arg Glu Leu Val Asn Pro Ala Ser Met Lys Gln Ala
1 5 10 15

.210-187

.211-15

.212 PPT

.213 Artificial Sequence

.214.

.213 Description of Artificial Sequence: Synthetic

.400-187

Arg Glu Leu Val Asn Pro Ala Ser Met Lys Gln Ala Leu Ile Ala
1 5 10 15

.110-188

.111-15

.112 PPT

.113 Artificial Sequence

.114.

.113 Description of Artificial Sequence: Synthetic

.400-188

Val Asn Pro Ala Ser Met Lys Gln Ala Leu Ile Ala Ser Ala Arg
1 5 10 15

.210-189

.211-15

.212 PPT

.213 Artificial Sequence

.214.

.213 Description of Artificial Sequence: Synthetic

.400-189

Ala Ser Met Lys Gln Ala Leu Ile Ala Ser Ala Arg Arg Leu Pro
1 5 10 15

<10> 190
<11> 15
<12> PFT
<13> Artificial Sequence

<14>
<15> Description of Artificial Sequence: Synthetic

<16> 190
Lys Gln Ala Leu Ile Ala Ser Ala Arg Arg Leu Pro Gly Val Asn
! . 5 10 15

<17> 191
<18> 15
<19> PFT
<20> Artificial Sequence

<21>
<22> Description of Artificial Sequence: Synthetic

<23> 191
Leu Ile Ala Ser Ala Arg Arg Leu Pro Gly Val Asn Met Phe Glu
! . 5 10 15

<24> 192
<25> 15
<26> PFT
<27> Artificial Sequence

<28>
<29> Description of Artificial Sequence: Synthetic

<30> 192
Ser Ala Arg Arg Leu Pro Gly Val Asn Met Phe Glu Gln Gly His
! . 5 10 15

<31> 193
<32> 15
<33> PFT
<34> Artificial Sequence

<35>
<36> Description of Artificial Sequence: Synthetic

<37> 193
Arg Leu Pro Gly Val Asn Met Phe Glu Gln Gly His Gly Lys Leu
! . 5 10 15

<38> 194
<39> 15
<40> PFT
<41> Artificial Sequence

<42>

4.2.1. Description of Artificial Sequence: Synthetic

4.2.1.1. 194

Gly Val Asn Met Phe Glu Gln Gly His Gly Lys Leu Asp Leu Leu
1 5 10 15

4.2.1.2. 195

4.2.1.2.1. 16

4.2.1.2.1.1. PPT

4.2.1.2.1.1.1. Artificial Sequence

4.2.1.3.

4.2.1.3. Description of Artificial Sequence: Synthetic

4.2.1.4. 195

Met Phe Glu Gln Gly His Gly Lys Leu Asp Leu Leu Arg Ala Tyr
1 5 10 15

4.2.1.5. 196

4.2.1.5.1. 15

4.2.1.5.1.1. PPT

4.2.1.5.1.1.1. Artificial Sequence

4.2.1.6.

4.2.1.6. Description of Artificial Sequence: Synthetic

4.2.1.7. 196

Gln Gly His Gly Lys Leu Asp Leu Leu Arg Ala Tyr Gln Ile Leu
1 5 10 15

4.2.1.8. 197

4.2.1.8.1. 15

4.2.1.8.1.1. PPT

4.2.1.8.1.1.1. Artificial Sequence

4.2.1.9.

4.2.1.9. Description of Artificial Sequence: Synthetic

4.2.1.10. 197

Gly Lys Leu Asp Leu Leu Arg Ala Tyr Gln Ile Leu Asn Ser Tyr
1 5 10 15

4.2.1.11. 198

4.2.1.11.1. 15

4.2.1.11.1.1. PPT

4.2.1.11.1.1.1. Artificial Sequence

4.2.1.12.

4.2.1.12. Description of Artificial Sequence: Synthetic

4.2.1.13. 198

Asp Leu Leu Arg Ala Tyr Gln Ile Leu Asn Ser Tyr Lys Pro Gln
1 5 10 15

4.2.1.14. 199

<411> 15

<412> PPT

<413> Artificial Sequence

<414>

<415> Description of Artificial Sequence: Synthetic

<416> 199

Arg Ala Tyr Gln Ile Leu Asn Ser Tyr Lys Pro Gln Ala Ser Leu
1 5 10 15

<417> 200

<418> 15

<419> PPT

<420> Artificial Sequence

<421>

<422> Description of Artificial Sequence: Synthetic

<423> 200

Gln Ile Leu Asn Ser Tyr Lys Pro Gln Ala Ser Leu Ser Pro Ser
1 5 10 15

<424> 101

<425> 15

<426> PPT

<427> Artificial Sequence

<428>

<429> Description of Artificial Sequence: Synthetic

<430> 101

Asn Ser Tyr Lys Pro Gln Ala Ser Leu Ser Pro Ser Tyr Ile Asp
1 5 10 15

<431> 102

<432> 15

<433> PPT

<434> Artificial Sequence

<435>

<436> Description of Artificial Sequence: Synthetic

<437> 102

Lys Pro Gln Ala Ser Leu Ser Pro Ser Tyr Ile Asp Leu Thr Glu
1 5 10 15

<438> 203

<439> 15

<440> PPT

<441> Artificial Sequence

<442>

<443> Description of Artificial Sequence: Synthetic

<400> 203

Ala Ser Leu Ser Pro Ser Tyr Ile Asp Leu Thr Glu Cys Pro Tyr
1 10 15

•210 - 204

•211 - 15

•212 - PFT

•213 - Artificial Sequence

•214 -

•215 - Description of Artificial Sequence: Synthetic

•216 - 204

Ser Ile Ser Tyr Ile Asp Leu Thr Glu Cys Pro Tyr Met Trp Pro
1 10 15

•217 - 205

•218 - 15

•219 - PFT

•213 - Artificial Sequence

•220 -

•213 - Description of Artificial Sequence: Synthetic

•218 - 205

Tyr Ile Asp Leu Thr Glu Cys Pro Tyr Met Trp Pro Tyr Cys Ser
1 10 15

•219 - 206

•211 - 15

•212 - PFT

•213 - Artificial Sequence

•221 -

•213 - Description of Artificial Sequence: Synthetic

•219 - 206

Leu Thr Glu Cys Pro Tyr Met Trp Pro Tyr Cys Ser Gln Pro Ile
1 5 10 15

•219 - 207

•211 - 15

•212 - PFT

•213 - Artificial Sequence

•222 -

•213 - Description of Artificial Sequence: Synthetic

•219 - 207

Cys Pro Tyr Met Trp Pro Tyr Cys Ser Gln Pro Ile Tyr Tyr Gly
1 5 10 15

•211 - 15

•212 - 1752

•213 - PFT

•213 - Homo sapiens

Met Lys Leu Val Asn Ile Trp Leu Leu Leu Val Val Leu Leu Cys
 1 5 10 15

Gly Lys Lys His Leu Gly Asp Arg Leu Glu Lys Lys Ser Phe Glu Lys
 20 25 30

Ala Pro Cys Pro Gly Cys Ser His Leu Thr Leu Lys Val Glu Phe Ser
 35 40 45

Ser Thr Val Val Glu Tyr Glu Tyr Ile Val Ala Phe Asn Gly Tyr Phe
 50 55 60

Thr Ala Lys Ala Arg Asn Ser Phe Ile Ser Ser Ala Leu Lys Ser Ser
 65 70 75 80

Gln Val Asp Asn Trp Arg Ile Ile Pro Arg Asn Asn Pro Ser Ser Asp
 85 90 95

Tyr Pro Ser Asp Phe Glu Val Ile Gln Ile Lys Glu Lys Gln Lys Ala
 100 105 110

Gly Leu Leu Thr Leu Glu Asp His Pro Asn Ile Lys Arg Val Thr Pro
 115 120 125

Gln Arg Lys Val Phe Arg Ser Leu Lys Tyr Ala Glu Ser Asp Pro Thr
 130 135 140

Val Pro Cys Asn Glu Thr Arg Trp Ser Gln Lys Trp Gln Ser Ser Arg
 145 150 155 160

Pro Leu Arg Arg Ala Ser Leu Ser Leu Gly Ser Gly Phe Trp His Ala
 165 170 175

Thr Gly Arg His Ser Ser Arg Arg Leu Leu Arg Ala Ile Pro Arg Gln
 180 185 190

Val Ala Gln Thr Leu Gln Ala Asp Val Leu Trp Gln Met Gly Tyr Thr
 195 200 205

Gly Ala Asn Val Arg Val Ala Val Phe Asp Thr Gly Leu Ser Glu Lys
 210 215 220

His Pro His Phe Lys Asn Val Lys Glu Arg Thr Asn Trp Thr Asn Glu
 225 230 235 240

Arg Thr Leu Asp Asp Gly Leu Gly His Gly Thr Phe Val Ala Gly Val
 245 250 255

Ile Ala Ser Met Arg Glu Lys Gln Gly Phe Ala Pro Asp Ala Glu Leu
 260 265 270

His Ile Phe Arg Val Phe Thr Asn Asn Gln Val Ser Tyr Thr Ser Trp
 275 280 285

Phe Leu Asp Ala Phe Asn Tyr Ala Ile Leu Lys Lys Ile Asp Val Leu
 290 295 300

Asn Leu Ser Ile Gly Gly Pro Asp Phe Met Asp His Pro Phe Val Asp

315	310	315	320
Lys Val Trp Glu Leu Thr Ala Asn Asn Val Ile Met Val Ser Ala Ile			
325		330	335
Gly Asn Asp Gly Pro Leu Tyr Gly Thr Leu Asn Asn Pro Ala Asp Glu			
340	345		350
Met Asp Val Ile Gly Val Gly Gly Ile Asp Phe Glu Asp Asn Ile Ala			
355	360	365	
Arg Phe Ser Ser Arg Gly Met Thr Thr Trp Glu Leu Pro Gly Gly Tyr			
370	375	380	
Gly Arg Met Lys Pro Asp Ile Val Thr Tyr Gly Ala Gly Val Arg Gly			
385	390	395	400
Ser Gly Val Lys Gly Gly Cys Arg Ala Leu Ser Gly Thr Ser Val Ala			
405	410	415	
Ser Pro Val Val Ala Gly Ala Val Thr Leu Leu Val Ser Thr Val Gln			
420	425	430	
Lys Arg Glu Leu Val Asn Pro Ala Ser Met Lys Gln Ala Leu Ile Ala			
435	440	445	
Ser Ala Arg Arg Leu Pro Gly Val Asn Met Phe Glu Gln Gly His Gly			
450	455	460	
Lys Leu Asp Leu Leu Arg Ala Tyr Gln Ile Leu Asn Ser Tyr Lys Pro			
465	470	475	480
Gln Ala Ser Leu Ser Pro Ser Tyr Ile Asp Leu Thr Gln Gln Pro Tyr			
485	490	495	
Met Trp Pro Tyr Cys Ser Gln Pro Ile Tyr Tyr Gly Met Pro Thr			
500	505	510	
Val Val Asn Val Thr Ile Leu Asn Gly Met Gly Val Thr Gly Arg Ile			
515	520	525	
Val Asp Lys Pro Asp Trp Gln Pro Tyr Leu Pro Gln Asn Gly Asp Asn			
530	535	540	
Ile Gln Val Ala Phe Ser Tyr Ser Ser Val Leu Trp Pro Trp Ser Gly			
545	550	555	560
Tyr Leu Ala Ile Ser Ile Ser Val Thr Lys Lys Ala Ala Ser Trp Glu			
565	570	575	
Gly Ile Ala Gln Gly His Val Met Ile Thr Val Ala Ser Pro Ala Glu			
580	585	590	
Thr Glu Ser Lys Asn Gly Ala Glu Gln Thr Ser Thr Val Lys Leu Pro			
595	600	605	
Ile Gln Val Lys Ile Ile Pro Thr Pro Pro Arg Ser Lys Arg Val Leu			
610	615	620	
Trp Asp Gln Tyr His Asn Leu Arg Tyr Pro Pro Gly Tyr Phe Pro Arg			

625	630	635	640
Asp Asn Leu Arg Met Lys Asn Asp Pro Leu Asp Trp Asn Gly Asp His			
645	650	655	
Ile His Thr Asn Phe Arg Asp Met Tyr Gln His Leu Arg Ser Met Gly			
660	665	670	
Tyr Phe Val Glu Val Leu Gly Ala Pro Phe Thr Cys Phe Asp Ala Ser			
675	680	685	
Gln Tyr Gly Thr Leu Leu Met Val Asp Ser Glu Glu Glu Tyr Phe Pro			
690	695	700	
Glu Glu Ile Ala Lys Leu Arg Arg Asp Val Asp Asn Gly Leu Ser Leu			
705	710	715	720
Val Ile Phe Ser Asp Trp Tyr Asn Thr Ser Val Met Arg Lys Val Lys			
725	730	735	
Phe Tyr Asp Glu Asn Thr Arg Gln Trp Trp Met Pro Asp Thr Gly Gly			
740	745	750	
Ala Asn Ile Pro Ala Leu Asn Glu Leu Leu Ser Val Thr Asn Met Gly			
755	760	765	
Phe Ser Asp Gly Leu Tyr Gln Gly Glu Ile Thr Leu Ala Asn His Asp			
770	775	780	
Met Tyr Tyr Ala Ser Gly Ser Ile Ala Lys Phe Pro Glu Asp Gly			
785	790	795	800
Val Val Ile Thr Gln Thr Phe Lys Asp Gln Gly Leu Glu Val Leu Lys			
805	810	815	
Gln Glu Thr Ala Val Val Glu Asn Val Pro Ile Leu Gly Leu Tyr Gln			
820	825	830	
Ile Pro Ala Glu Gly Gly Arg Ile Val Leu Tyr Gly Asp Ser Asn			
835	840	845	
Cys Leu Asp Asp Ser His Arg Gln Lys Asp Cys Phe Trp Leu Leu Asp			
850	855	860	
Ala Leu Leu Gln Tyr Thr Ser Tyr Gly Val Thr Pro Pro Ser Leu Ser			
865	870	875	880
His Ser Gly Asn Arg Gln Arg Pro Pro Ser Gly Ala Gly Ser Val Thr			
885	890	895	
Pro Glu Arg Met Glu Gly Asn His Leu His Arg Tyr Ser Lys Val Leu			
900	905	910	
Glu Ala His Leu Gly Asp Pro Lys Pro Arg Pro Leu Pro Ala Cys Pro			
915	920	925	
Arg Leu Ser Thr Ala Lys Pro Gln Pro Leu Asn Gln Thr Ala Pro Ser			
930	935	940	
Asn Leu Trp Lys His Gln Lys Leu Leu Ser Ile Asp Leu Asp Lys Val			

945 950 955 960

Val Leu Pro Asn Phe Arg Ser Asn Arg Pro Gln Val Arg Pro Leu Ser
965 970 975

Pro Gly Glu Ser Gly Ala Trp Asp Ile Pro Gly Gly Ile Met Pro Gly
980 985 990

Arg Tyr Asn Gln Glu Val Gly Gln Thr Ile Pro Val Phe Ala Phe Leu
995 1000 1005

Gly Ala Met Val Val Leu Ala Phe Phe Val Val Gln Ile Asn Lys Ala
1010 1015 1020

Lys Ile Arg Pro Lys Arg Arg Lys Pro Arg Val Lys Arg Pro Gln Leu
1025 1030 1035 1040

Met Ser Gln Val His Pro Pro Lys Thr Pro Ser Val
1045 1050

<110> 109

<111> 280

<112> PRT

<113> Homo sapiens

<110> 109

Arg Ala Ile Pro Arg Gln Val Ala Gln Thr Leu Gln Ala Asp Val Leu
11 11 11 11

Trp Gln Met Gly Tyr Thr Gly Ala Asn Val Arg Val Ala Val Phe Asp
20 25 30

Thr Gly Leu Ser Glu Lys His Pro His Phe Lys Asn Val Lys Glu Arg
35 40 45

Thr Asn Trp Thr Asn Glu Arg Thr Leu Asp Asp Gly Leu Gly His Gly
50 55 60

Thr Phe Val Ala Gly Val Ile Ala Ser Met Arg Glu Cys Gln Gly Phe
65 70 75 80

Ala Pro Asp Ala Glu Leu His Ile Phe Arg Val Phe Thr Asn Asn Gln
85 90 95

Val Ser Tyr Thr Ser Trp Phe Leu Asp Ala Phe Asn Tyr Ala Ile Leu
100 105 110

Lys Lys Ile Asp Val Leu Asn Leu Ser Ile Gly Gly Pro Asp Phe Met
115 120 125 130

Asp His Pro Phe Val Asp Lys Val Trp Glu Leu Thr Ala Asn Asn Val
130 135 140 145

Ile Met Val Ser Ala Ile Gly Asn Asp Gly Pro Leu Tyr Gly Thr Leu
145 150 155 160

Asn Asn Pro Ala Asp Gln Met Asp Val Ile Gly Val Gly Gly Ile Asp
165 170 175

Phe Glu Asp Asn Ile Ala Arg Phe Ser Ser Arg Gly Met Thr Thr Trp
180 185 190

Glu Leu Pro Gly Gly Tyr Gly Arg Met Lys Pro Asp Ile Val Thr Tyr
195 200 205

Gly Ala Gly Val Arg Gly Ser Gly Val Lys Gly Gly Cys Arg Ala Leu
210 215 220

Ser Gly Thr Ser Val Ala Ser Pro Val Val Ala Gly Ala Val Thr Leu
225 230 240

Leu Val Ser Thr Val Gln Lys Arg Glu Leu Val Asn Pro Ala Ser Met
245 250 255

Lys Glu Ala Leu Ile Ala Ser Ala Arg Arg Leu Pro Gly Val Asn Met
260 265 270

Phe Glu Glu Gly His Gly Lys Leu
275 280

<210> 210

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<221> Description of Artificial Sequence: Synthetic

<230> 210

Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 211

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<221> Description of Artificial Sequence: Synthetic

<230> 211

Ala Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 211

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<221> Description of Artificial Sequence: Synthetic

<230> 212

Gly Ala Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 213
<211> 15
<212> PPT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

<400> .13
Gly Ser Ala Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
: : : : : : : : : : : : : : : :
10 15

<210> 214
<211> 15
<212> PPT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

<400> .14
Gly Ser Ile Ala Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
: : : : : : : : : : : : : : : :
10 15

<210> 215
<211> 15
<212> PPT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

<400> .15
Gly Ser Ile Ser Ser Ala Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
: : : : : : : : : : : : : : : :
10 15

<210> 216
<211> 15
<212> PPT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

<400> 216
Gly Ser Ile Ser Tyr Ala Ala Arg Tyr Ala Asn Ala Met Ala Val
: : : : : : : : : : : : : : : :
10 15

<210> 217
<211> 15
<212> PPT
<213> Artificial Sequence

<214>
<215> Description of Artificial Sequence: Synthetic

410> 217

Gly Ser Ile Ser Tyr Pro Ala Ala Tyr Ala Asn Ala Met Ala Val
1 5 10 15

411> 218

4111> 15

4112> PPT

4113> Artificial Sequence

4120>

4121> Description of Artificial Sequence: Synthetic

4122> 218

Gly Ser Ile Ser Tyr Pro Ala Arg Ala Ala Asn Ala Met Ala Val
1 5 10 15

4123> 219

4124> 15

4125> PPT

4126> Artificial Sequence

4127>

4128> Description of Artificial Sequence: Synthetic

4129> 219

Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Ala Asn Ala Met Ala Val
1 5 10 15

4210> 220

4211> 15

4212> PPT

4213> Artificial Sequence

4214>

4215> Description of Artificial Sequence: Synthetic

4216> 220

Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Ala Ala Val
1 5 10 15

4310> 221

4311> 15

4312> PPT

4313> Artificial Sequence

4314>

4315> Description of Artificial Sequence: Synthetic

4316> 221

Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Ala
1 5 10 15

4310> 222

4311> 15

..212 PFT

..213 Humicola inscens

..400 ..411

Pro Gly Gly Val Ala Tyr Ser Cys Ala Asp Gln Thr Pro Trp Ala
1 5 10 15

..110 ..115

..111 ..116

..112 PFT

..113 Humicola inscens

..400 ..413

Cys Gly Trp Ala Lys Lys Ala Pro Val Asn Gln Pro Val Phe Ser
1 5 10 15

..110 ..114

..111 ..116

..112 PFT

..113 Humicola inscens

..400 ..424

Met Arg Ser Ser Pro Leu Leu Pro Ser Ala Val Val Ala Ala Leu Pro
1 5 10 15

Val Leu Ala Leu Ala Ala Asp Gly Arg Ser Thr Arg Tyr Trp Asp Cys
20 25 30

Cys Lys Pro Ser Cys Gly Trp Ala Lys Lys Ala Pro Val Asn Gln Pro
35 40 45

Val Phe Ser Cys Asn Ala Asn Phe Gln Arg Ile Thr Asp Phe Asp Ala
5 55 60

Lys Ser Gly Cys Glu Pro Gly Gly Val Ala Tyr Ser Cys Ala Asp Gln
65 70 75 80

Thr Pro Trp Ala Val Asn Asp Asp Phe Ala Leu Gly Phe Ala Ala Thr
85 90 95

Ser Ile Ala Gly Ser Asn Glu Ala Gly Trp Cys Cys Ala Cys Tyr Glu
100 105 110

Leu Thr Phe Thr Ser Gly Pro Val Ala Gly Lys Lys Met Val Val Gln
115 120 125

Ser Thr Ser Thr Gly Gly Asp Leu Gly Ser Asn His Phe Asp Leu Asn
130 135 140

Ile Ile Gly Gly Gly Val Gly Ile Phe Asp Gly Cys Thr Pro Gln Phe
145 150 155 160

Gly Gly Leu Pro Gly Gln Arg Tyr Gly Gly Ile Ser Ser Arg Asn Gln
165 170 175

Cys Asp Arg Phe Pro Asp Ala Leu Lys Pro Gly Cys Tyr Trp Arg Phe
180 185 190

Asp Trp Phe Lys Asn Ala Asp Asn Pro Ser Phe Ser Phe Arg Gin Val
195 200 205

Gln Cys Pro Ala Glu Leu Val Ala Arg Thr Gly Cys Arg Arg Asn Asp
210 215 220

Asp Gly Asn Phe Pro Ala Val Gln Ile Pro Ser Ser Ser Thr Ser Ser
225 230 235 240

Pro Val Asn Gln Pro Thr Ser Thr Ser Thr Ser Thr Ser Thr Thr
245 250 255

Ser Ile Phe Pro Val Gln Pro Thr Thr Pro Ser Gly Cys Thr Ala Glu
260 265 270

Arg Trp Ala Gin
275

<210> 225

<211> 13

<212> PRT

<213> Thermomyces lanuginosus

<400> ...6

Gly Asp Val Thr Gly Phe Leu Ala Leu Asp Asn Thr Asn Lys Leu Ile
1 5 10 15

Val Leu

<210> 226

<211> 15

<212> PRT

<213> Thermomyces lanuginosus

<400> ...6

Ser Ile Glu Asn Trp Ile Gly Asn Leu Asn Phe Asp Leu Lys Glu
1 5 10 15

<210> 227

<211> 231

<212> PRT

<213> Thermomyces lanuginosus

<400> ...7

Met Arg Ser Ser Leu Val Leu Phe Phe Val Ser Ala Trp Thr Ala Leu
1 5 10 15

Ala Ser Pro Ile Arg Arg Glu Val Ser Gln Asp Leu Phe Asn Gln Phe
20 25 30

Asn Leu Phe Ala Gln Tyr Ser Ala Ala Ala Tyr Cys Gly Lys Asn Asn
35 40 45

Asp Ala Pro Ala Gly Thr Asn Ile Thr Cys Thr Gly Asn Ala Cys Pro
50 55 60

Glu Val Glu Lys Ala Asp Ala Thr Phe Leu Tyr Ser Phe Glu Asp Ser
 65 71 75 80
 Gly Val Gly Asp Val Thr Gly Phe Leu Ala Leu Asp Asn Thr Asn Lys
 85 90 95
 Leu Ile Val Leu Ser Phe Arg Gly Ser Arg Ser Ile Glu Asn Trp Ile
 100 105 110
 Gly Asn Leu Asn Phe Asp Leu Lys Glu Ile Asn Asp Ile Cys Ser Gly
 115 120 125
 Lys Arg Gly His Asp Gly Phe Thr Ser Ser Trp Arg Ser Val Ala Asp
 130 135 140
 Thr Leu Arg Gln Lys Val Glu Asp Ala Val Arg Glu His Pro Asp Tyr
 145 150 155 160
 Arg Val Val Phe Thr Gly His Ser Leu Gly Ala Leu Ala Thr Val
 165 170 175
 Ala Gly Ala Asp Leu Arg Gly Asn Gly Tyr Asp Ile Asp Val Phe Ser
 180 185 190
 Tyr Gly Ala Pro Arg Val Gly Asn Arg Ala Phe Ala Glu Phe Leu Thr
 195 200 205
 Val Glu Thr Gly Gly Thr Leu Tyr Arg Ile Thr His Thr Asn Asp Ile
 210 215 220
 Val Pro Arg Leu Pro Pro Arg Glu Phe Gly Tyr Ser His Ser Ser Pro
 225 230 235 240
 Glu Tyr Trp Ile Lys Ser Gly Thr Leu Val Pro Val Thr Arg Asn Asp
 245 250 255
 Ile Val Lys Ile Glu Gly Ile Asp Ala Thr Gly Asn Asn Gln Pro
 260 265 270
 Asn Ile Pro Asp Ile Pro Ala His Leu Trp Tyr Phe Gly Leu Ile Gly
 275 280 285
 Thr Cys Leu
 290

...10 - 228
 ...11 - 15
 ...12 - PRT
 ...13 - Streptomyces plicatus

2430 - 224
 Ile Lys Val Leu Leu Ser Val Leu Gly Asn His Gln Gly Ala Gly
 1 5 10 15

...10 - 229
 ...11 - 313
 ...12 - PRT
 ...13 - Streptomyces plicatus

<400 : 223

Met	Phe	Thr	Pro	Val	Arg	Arg	Arg	Val	Arg	Thr	Ala	Ala	Leu	Ala	Leu
1				5					10						15

Ser	Ala	Ala	Ala	Ala	Leu	Val	Leu	Gly	Ser	Thr	Ala	Ala	Ser	Gly	Ala
					20			25						30	

Ser	Ala	Thr	Pro	Ser	Pro	Ala	Pro	Ala	Pro	Ala	Pro	Val	Lys		
		35				40						45			

Gln	Gly	Pro	Thr	Ser	Val	Ala	Tyr	Val	Glu	Val	Asn	Asn	Asn	Se:	Met
					50		55		60						

Leu	Asn	Val	Gly	Lys	Tyr	Thr	Leu	Ala	Asp	Gly	Gly	Asn	Ala	Phe	
		65			70			75						80	

Asp	Val	Ala	Val	Ile	Phe	Ala	Ala	Asn	Ile	Asn	Tyr	Asp	Thr	Gly	Thr
				85					90					95	

Lys	Thr	Ala	Tyr	Leu	His	Phe	Asn	Glu	Asn	Val	Gln	Arg	Val	Leu	Asp
					100			105					110		

Asn	Ala	Val	Thr	Gln	Ile	Arg	Phe	Leu	Gln	Gln	Gly	Ile	Lys	Val	
					115		120		125						

Leu	Leu	Ser	Val	Leu	Gly	Asn	His	Gln	Gly	Ala	Gly	Phe	Ala	Asn	Phe
					130		135					140			

Pro	Ser	Gln	Gln	Ala	Ala	Ser	Ala	Phe	Ala	Lys	Gln	Leu	Ser	Asp	Ala
		145				150				155				160	

Val	Ala	Lys	Tyr	Gly	Leu	Asp	Gly	Val	Asp	Phe	Asp	Asp	Glu	Tyr	Ala
		165				170				175				180	

Glu	Tyr	Gly	Asn	Asn	Gly	Thr	Ala	Gln	Pro	Asn	Asp	Ser	Ser	Phe	Val
					185			190					195		

His	Leu	Val	Thr	Ala	Leu	Arg	Ala	Asn	Met	Pro	Asp	Lys	Ile	Ile	Ser
						200			205				210		

Leu	Tyr	Asn	Ile	Gly	Pro	Ala	Ala	Ser	Arg	Leu	Ser	Tyr	Gly	Val	
			210			215			220						

Asp	Val	Ser	Asp	Lys	Phe	Asp	Tyr	Ala	Trp	Asn	Pro	Tyr	Tyr	Gly	Thr
			225		230			235				240			

Trp	Gln	Val	Pro	Gly	Ile	Ala	Leu	Pro	Lys	Ala	Gln	Leu	Ser	Pro	Ala
					245			250				255			

Ala	Val	Glu	Ile	Gly	Arg	Thr	Ser	Arg	Ser	Thr	Val	Ala	Asp	Leu	Ala
					260		265				270				

Arg	Arg	Thr	Val	Asp	Glu	Gly	Tyr	Gly	Val	Tyr	Leu	Thr	Tyr	Asn	Leu
			275		280				285						

Asp	Gly	Gly	Asp	Arg	Thr	Ala	Asp	Val	Ser	Ala	Phe	Thr	Arg	Glu	Leu
			290		295					300					

Tyr	Gly	Ser	Glu	Ala	Val	Arg	Thr	Pro							
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• 10 • 230
 • 11 • 15
 • 12 • PPT
 • 13 • *Bacillus amyloliquefaciens*

• 401 • 230
 Gly Thr Val Ala Ala Leu Asn Asn Ser Ile Gly Val Leu Gly Val
 1 5 10 15

• 10 • 231
 • 11 • 15
 • 12 • PPT
 • 13 • *Bacillus amyloliquefaciens*

• 401 • 231
 Asn Gly Ile Glu Trp Ala Ile Ala Asn Asn Met Asp Val Ile Asn
 1 5 10 15

• 10 • 232
 • 11 • 15
 • 12 • PPT
 • 13 • *Bacillus latus*

• 401 • 232
 Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp Thr Gly Ile Ser
 1 5 10 15

• 10 • 233
 • 11 • 15
 • 12 • PPT
 • 13 • *Bacillus latus*

• 401 • 233
 Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala Ser Gly Ser
 1 5 10 15

• 210 • 234
 • 11 • 17
 • 12 • PPT
 • 13 • *Bacillus latus*

• 401 • 234
 Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val Gly
 1 5 10 15

Ala

• 10 • 235
 • 11 • 15
 • 12 • PPT
 • 13 • *Bacillus latus*

400 - 235
 Gly Ala Gly Leu Asp Ile Val Ala Pro Gly Val Asn Val Gln Ser
 1 5 10 15

410 - 130
 411 - 270
 412 - PRT
 413 - Artificial Sequence

416 -
 413 - Description of Artificial Sequence: Hybrid of
Bacillus latus and *Bacillus amyloliquefaciens*

410 - 130
 Ala Glu Ser Val Pro Trp Gly Ile Ser Arg Val Gln Ala Pro Ala Ala
 1 5 10 15

His Asn Arg Gly Leu Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp
 20 25 30

Thr Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly Gly Ala Ser
 35 40 45

Phe Val Pro Gly Glu Pro Ser Thr Gln Asp Gly Asn Gly His Gly Thr
 50 55 60

His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly Val Leu
 65 70 75 80

Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala
 85 90 95

Ser Gly Ser Gly Ser Val Ser Ser Ile Ala Gln Gly Leu Glu Trp Ala
 100 105 110

Gly Asn Asn Gly Met His Val Ile Asn Met Ser Leu Gly Gly Ser Gly
 115 120 125

Ser Ala Ala Leu Lys Ala Ala Val Asp Lys Ala Val Ala Ser Gly Val
 130 135 140

Val Val Val Ala Ala Ala Gly Asn Glu Gly Thr Ser Gly Ser Ser Ser
 145 150 155 160

Thr Val Gly Tyr Pro Gly Lys Tyr Pro Ser Val Ile Ala Val Gly Ala
 165 170 175

Val Asp Ser Ser Asn Gln Arg Ala Ser Phe Ser Ser Val Gly Pro Glu
 180 185 190

Leu Asp Val Met Ala Pro Gly Val Ser Ile Gln Ser Thr Leu Pro Gly
 195 200 205

Asn Lys Tyr Gly Ala Tyr Asn Gly Thr Ser Met Ala Ser Pro His Val
 210 215 220

Ala Gly Ala Ala Ala Leu Ile Leu Ser Lys His Pro Asn Trp Thr Asn
 225 230 235 240

Thr Gln Val Arg Ser Ser Leu Glu Asn Thr Thr Lys Leu Gly Asp
245 250 255

Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Asn Val Gln Ala Ala Ala Gin
260 265 270